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ABSTRACT

The first phase of this study focused on the effects of message redundancy on communication accuracy of listeners in kindergarten, second, and fifth grades under memory and stimulus-visible conditions. Three nearly identical line drawings, each containing a large number of items in common and at least one distinctive feature, were presented on index cards in 12 different experimental trials at three levels of redundancy. Subjects were instructed to choose the pictures designated by the examiner's message. Half the subjects heard the messages while the pictures were not visible; others could inspect the array while the message was spoken. The second phase of the study was conducted in a similar manner, but included a speaking task requiring subjects to evaluate the examiner's redundant messages, revise them, and explain their revisions. Coaching and reinforcement for brevity were provided midway in the second trial sequence. Listeners in the first phase showed main effects for age and memory with no interaction. Speakers in the second phase produced redundant, informative messages. Coaching facilitated brevity only when memory was a factor. Subjects judged redundant messages to be "easy" and were fairly successful in choosing the target referent. (Author/RH)

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Listener Processing and Speaker Production of Redundant Messages

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Abstract

Forty-eight listeners in kindergarten, second, and fifth grades heard redundant messages and chose the referents with and without memory as a factor. In Phase Two of the study subjects saw the same set of pictures, heard redundant messages, and again chose a referent. A speaker task followed requiring subjects evaluate the examiner's redundant messages, revise them, and explain their revisions. Coaching and reinforcement for brevity were included midway in the second trial sequence. Listeners in Phase One showed main effects for age and memory with no interaction. Speakers in Phase Two produced redundant, informative messages. Coaching facilitated brevity only when memory was a factor. Subjects judged redundant messages to be "easy," and they were fairly successful in choosing the target referent.

Listener Processing and Speaker Production of Redundant Messages

An informative referential communication can be contrastive, naming precisely those features of the target referent that are distinctive, or it can be redundant, naming irrelevant as well as distinctive features. Previous research has revealed that when school-age children produce informative messages, they tend to produce more redundant than contrastive messages (Whitehurst, 1976; Sonnenschein & Whitehurst, 1980).

This result was obtained with tasks in which two-adjective contrastive messages and three-adjective redundant messages were appropriate. The small number of adjectives attributable to Whitehurst's (1976) stimuli imposes a limitation on the generalizability of this finding. When there are only three adjectives, perhaps speakers are more prone to include irrelevant information than when the number of message elements becomes very large. Listeners, too, may be more tolerant of redundant messages as long as their memory load is not overly taxed.

The present study explored the effects of message redundancy on communication accuracy of listeners in kindergarten, second, and fifth grades with and without memory as a factor. The messages contained four, eight, or twelve irrelevant items of information. In Phase Two of the study, subjects were asked to evalute the experimenter's redundant messages, revise them, and explain their revision. Coaching and reinforcement for brevity were included midway through the second trial sequence.

Method

Subjects. Sixteen subjects from kindergarten, second grade, and fifth grade of a public elementary school is a small midwestern town

were tested individually in sessions lasting about forty minutes. All the subjects were making normal progress in school and had no known mental or physical disability.

Materials. Three nearly identical line drawings containing a large number of items in common and at least one distinctive feature were presented on 3 x 5 inch index cards on each trial. There were twelve sets of drawings.

Procedure. After two practice trials demonstrating the task requirement to choose the pictures designated by the examiner's message, twelve trials were presented with three levels of redundancy: five items of information (four irrelevant), nine items of information (eight irrelevant), and thirteen items of information (twelve irrelevant). Picture sets and level of redundancy were randomly resequenced for each subject, and the examiner constructed appropriate messages for each trial. Half the subjects were randomly assigned to a memory condition and heard the messages while the pictures were concealed from view. The other subjects could inspect the array while the message was spoken.

In Phase Two of the study subjects saw the same sets of pictures, heard messages with four or with twelve irrelevant items, and again chose a referent. Additionally, subjects were asked to evaluate whether the examiner's message made it easy or hard to make the right choice, to construct a message, and to explain whey their message made it easy to choose the target picture. After four trials without feedback, subjects were coached for four trials that sometimes a short message is easier to understand and extra words make it harder to choose the right picture. Shorter messages were verbally reinforced. Finally, four post-coaching trials were presented without reinforcement.

Results and Discussion

Mean percent correct referent choiced made by listeners in the memory and no-memory conditions are presented in Table 1. There were

Insert Table 1 about here

significant effects for grade levels and for the memory factor with no interactions. Performance improved with age, and performance in the no-memory condition was much better than in the memory condition, approaching 100% at 5th grade regardless of the number of irrelevant items in the message.

Even in the memory condition, performance was good, considering the intrinsic difficulty of the task. It is noteworthy that the number of irrelevant items had no significant effect on performance. Apparently speakers pay a negligible price for redundancy even when memory is a factor.

Since some messages exceeded the traditional human memory span of seven plus or minutes two (Miller, 1956), it must be concluded that listeners have ways of processing irrelevant information without holding it in store as discreet items. Perhaps they chunk it into larger units or disregard some of it as unessential.

Results from the examiner's question whether a redundant message made it easy or hard to choose the right picture are reported in Table 2. The main effects of age, memeory, and level of redundancy were all

Insert Table 2 about here

significant at the .01 level. The older subjects tended to approve of redundant messages more than younger subjects, and all subjects were more tolerant of redundant messages when memory was not a factor. As

expected, the shorter redundant messages were judged "easy" more frequently than the longer redundant messages.

The mean number of clues in messages produced by subjects in Phase Two is reported in Table 3. There was a significant main effect of

Insert Table 3 about here

grade level, as younger subjects generally produced longer, more redundant messages. A coaching effect was evident in the memory condition resulting in significantly shorter messages. In the no-memory condition, coaching had no such effect. Presumably subjects rejected as unnecessary the suggestion to use fewer words when the pictures were in plain view.

Six kindergarten children, eight second graders, and thirteen fifth graders justified their messages as easier because they were shorter. These judgments may reflect compliance with task demands. Sonnenschein & Whitehurst (1980) have cautioned that performance in referential communication tasks is very sensitive to subtle contextual clues and implicit task demands.

The mean percent of subjects' messages that, although redundant, were informative, is presented in Table 4. Informative messages were the rule, especially at older ages.

Insert Table 4 about here

Summary and Conclusions

The results of this study clearly show that school age listeners can interpret messages containing a considerable amount of useless information without great loss of communication accuracy. Speakers from kin-

dergarten to fifth grade are prone to produce redundant messages, and although they pay lip service to the virtues of brevity, they show no inclination to shorten their messages when memory is not a factor for the listener.

Whitehurst (1976) has attributed young speakers' tendencies toward redundancy to a principle of least effort. It is easier to name a number of adjectives than to discover which adjectives are distinctive. The results of the present study are consistent with Whitehurst's explanation, and they extend his findings to circumstances in which the referents could be described by more than a dozen itmes of information. Of course, the longer the message, the more likely it is that it will be informative. It is easier to talk than to think, and, quite frequently, it seems to work.

References

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Table 1

Mean Percent Correct Referent Choices

With Memory and No Memory at Each Grade Level

	Memory			No-Memory		
No. of Irrelevant Items	K	2	5	K	2	5
Four	66%	69%	84%	94%	94%	100%
Eight	69%	72%	81%	78%	78%	97%
Twelve	69%	75%	72%	84%	88%	100%
TOTAL	68%	72%	79%	86%	86%	99%

Table 2

Mean Percent Ratings of Redundant Messages as "Easy"

As A Function of Grade Level, Memory, and Amount of Redundancy

Grade Level	Message Length	Memory	No-Memory
Kindergarten	13-Item	44%	69%
	5-Item	62%	73%
2nd. Grade	13-Item	54%	77%
	5-Item	69%	92%
5th Grade	13-Item	86%	94%
	5-Item	94%	96%

Table 2

Mean Number of Clues in Subjects' Messages

as a Function of Grade Level, Memory, Coaching, and Model Redundancy

Grade Level	Message Length	Memory		No-Memory	
		Pre	Post	Pre	Post
Kindergarten	5-Item	3.69	3.63	2.31	3.44
	13-Item	3.69	2.75	3.38	3.44
2	5-Item	4.13	3.06	4.00	3.69
	13-Item	3.81	3.25	3.94	4.00
5	5-Item	2.75	1.88	1.56	1.44
	13-Item	3.25	2.19	1.75	1.25

Table 4

Mean Percent of Informative Messages

as a Function of Grade Level, Memory, and Coaching

Grade Level	Memory		No-Memory	
	Pre	Post	Pre	Post
Kindergarten	50%	69%	78%	60%
Second Grade	66%	66%	53%	91%
Fifth Grade	81%	94%	81%	85%